

## Ψ Team- Lab Carousel Handout: Organic Chemistry Unit- Return of the Ooze!

### INTRODUCTION: Genetic Sabotage at the Nickelodeon Teen Choice Awards!!

Miley Cyrus is performing at the Teen Choice Awards this year— Krang sends orders to mutate her into an unstoppable abomination of pop-culture-oversaturation and annihilation! You are a member of one of the squads of Shredder's Foot Clan (Black, Red or Green Squad—**YOUR CHOICE!**). Work with the other cyber-ninjas in your squad to synthesize deoxyribonucleic-acid-infused ooze to mutate Ms. Cyrus- during her performance of "Can't Be Tamed"- into the totem creature of your squad and curry favour with The Shredder!!

**BLACK SQUAD-** Infuse the ooze with DNA culled from moray eels (*Muraena helena*), to create **MAMBA TREPANGER**, the horror of the Southeast Asian Seas!!!

**RED SQUAD-** Infuse the ooze with DNA harvested from fossils of *Rhamphorynchus muensteri*, to create **REDRAIN TERRADIVE**, the scourge of the German airwaves!!!

**GREEN SQUAD-** Infuse the ooze with DNA dissected from your squad's pet Gila Monster (*Heloderma suspectum*), to create **VERIDIS THRILLAH**, the acid-mouthed terror of the Nevada highways!!!

### MATERIALS

Polyvinyl Acetate (a.k.a. "Elmer's White School Glue")

Propylene Glycol / Propylparaben / "Colour" in Water (a.k.a. "Club House Neon Food Colour Preparation")

- 1 Flask of Pink
- 1 Flask of Magenta
- 1 Flask of Blue
- 1 Flask of Yellow

Sodium Borate Decahydrate (a.k.a. "Borax")

Water

50 mL Falcon Tubes

Zip-Loc Bags

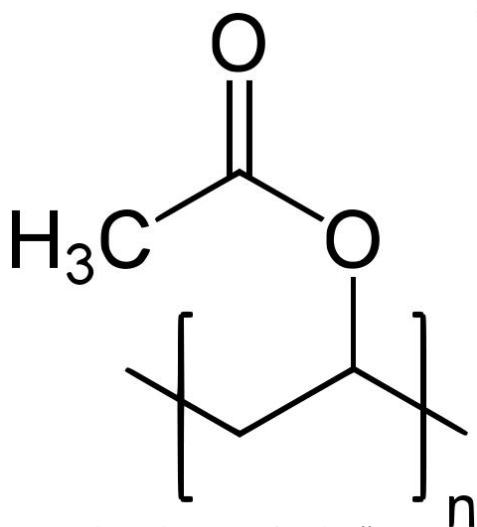
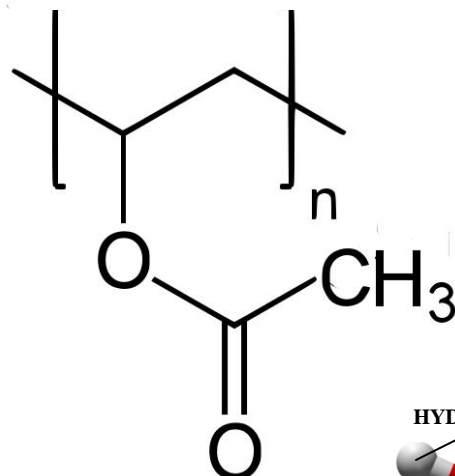
100 mL Graduated Cylinders

### PROTOCOL

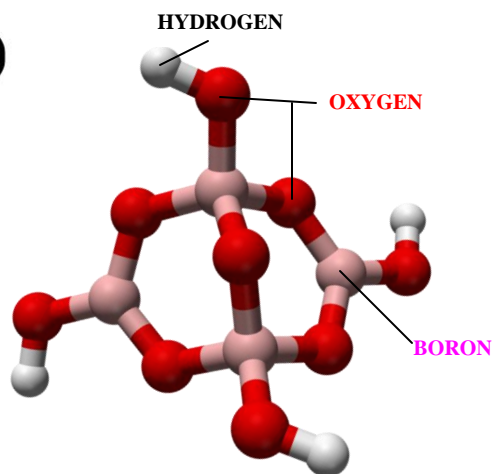
- 1) Add 5 mL of the Polyvinyl Acetate to 15 mL of water and mix until the solution is homogenous.
- 2) Add 3 drops of Food Colouring to infuse the ooze with the DNA choice of your squad –
  - ❖ **Black Squad:** 3 drops Pink, 3 drops Magenta, 3 drops Blue, 3 drops Yellow
  - ❖ **Red Squad:** 5 drops Magenta, 3 drops Pink
  - ❖ **Green Squad:** 6 drops Yellow, 3 drops Blue
- 3) Add 4 g of Sodium Borate to 96 mL of water and mix until the powder stops dissolving (some powder will likely remain at the bottom of the tube—**What type of solution is this?** \_\_\_\_\_)
- 4) Pour the 20 mL of the solution from Step # 1 into a Zip-Loc bag.
- 5) Add 7 mL of the solution from Step # 2 to the bag, seal it and knead the contents of the bag with your hands to ensure thorough mixing.
- 6) Open the Zip-Loc bag and conceal yourself below the stage! Miley's about to go on!

## CHEMICAL STRUCTURE: Can You Deduce What Happened at the Chemical Level...?

Polyvinyl Acetate Chain #1



Polyvinyl Acetate Chain #2



Borax Anion-  $[B_4O_5(OH)_4]^{2-}$

### DISCUSSION QUESTIONS

- I) What do you suppose would happen if you increased the relative amount of Polyvinyl Acetate in the ooze recipe?
- II) What would happen if you added more Sodium Borate?

### References

Glow-in-the-Dark Slime Protocol:

<http://chemistry.about.com/od/chemistryhowtguide/ht/glowindarkslime.htm>

The Chemistry of Slime Formation:

<http://www.chemistryland.com/CHM107Lab/Lab7/Slime/Lab7Slime.htm>